

Some anomalous types of African Odonata and the description of a new species

by

E. C. G. PINHEY

National Museum, Bulawayo

In preparing a "Descriptive Catalogue of the Odonata of the Ethiopian Region" (Pinhey, 1962), it appeared desirable to examine a few of the anomalous types housed in European Museums, and, with the help of the collection in the National Museum, Bulawayo, endeavour to seek the true relationship of some of these uncertain species. Eighteen species were selected but it was anticipated that there might be some reluctance to the loan of type material over the long postal network involved. However, the authorities concerned all proved only too willing to lend this material. The author is deeply grateful for this unstinting assistance received from the following Institutions (with abbreviated title as used in this paper): BERLIN, Dr K. K. Günther, Zoologisches Museum (Humboldt University) (Berlin Museum); BRUXELLES, M. G. Demoulin, Institut royal des Sciences naturelles de Belgique (Bruxelles Museum); Dr P. Basilewsky, Musée royal de l'Afrique centrale, Tervuren (Tervuren Museum); STOCKHOLM, Dr E. Kjellander, Naturhistoriska Riksmuseet (Stockholm Museum); WIEN, Dr M. Beier, Naturhistorisches Museum (Vienna Museum).

With their help it has been possible to establish relationships and synonymy for some species, but for others no definite conclusion seems to be possible.

Disparoneura cellularis Selys, 1902

S.B. Ges. naturf. Fr. Berl. 9: 232.

The type, a teneral ♂ in Berlin Museum, is labelled "Nyassa-See, Langenburg, 22.XI-7.XII.98, Fülleborn S." On one label it has been referred to *Disparoneura vittata* Selys, suggesting that it is near that species, which is now known as *Prodasineura vittata* (Selys, 1886).

Description: In the venation, 1 A in forewings just reaches level of distal end of quadrilateral, but low down, a character found in species of *Isomecognemis* Cowley, 1936. In the hindwings (one of them incomplete) this vein is broken before reaching distal end of subquadrangle, having a short cross-vein at two-thirds or three-quarters of the distance descending from 1A to posterior margin of wing, more like the condition in species of *Prodasineura* Cowley, 1934. From studies of series of *Prodasineura vittata* (Selys, 1886) it would

appear to the author that the length of 1A here is variable and that Cowley's two genera may have to be amalgamated. Moreover, in *vittata* (Selys) the thoracic antehumeral stripes are incomplete dorsally, unlike the condition in the type specimen of *cellularis*.

Description: Hindwing 21 mm. Lips and face pale brownish, slightly darker on frons, with an obscure darker band across to the eyes; the eyes themselves banded. Vertex and occiput above black, with some thin white pruinosity (despite the otherwise teneral appearance); a yellowish band from eye to eye in ocellar region. Prothorax brown, with diffuse yellow dorsolateral stripe; prothoracic hindlobe entire, broadish. Synthorax brown above and as far down as first lateral suture; with complete narrow, yellow antehumeral. Lower sides and ventral surface pale yellowish with indistinct brown streak on second lateral suture. Abdomen incomplete at both ends, the appendages missing; markings with a teneral appearance, darkened at ends of segments. Wings hyaline. Pterostigma pale brown, between darker brown veins. Ac nearer second than first Ax; 12 and 14 Px, respectively, in the complete forewing and hindwing. R_{4+5} arising directly below nodus.

It is evident that this specimen does not represent *Prodasineura vittata* (Selys) and it appears to be nearer *Isomecocnemis cyanura* (Forster, 1909).

Disparoneura glauca Selys, 1860

Bull. Acad. Belg. Cl. Sci. (2)10: 443.

Two ♀♀ in Bruxelles Museum are both very teneral, the pale markings on face and body creamy-white. One specimen from Port Natal (Durban), is complete, the other (labelled no. 153,57 in red) from the Cape lacks abdominal segments 7-10. The abdomen of the Durban specimen measures 31 mm.

The present author assumed (Pinhey, 1951) that this species was the same as, and had priority over *Disparoneura mutata* (Selys, 1886). It is difficult to be quite certain of the differences between very teneral females of *Elatoneura mutata* (Selys) and *E. frenulata* (Hagen, 1860), the markings in these two species being very close. The prothoracic stylets, however, of the two examples of *glauca* are in the prone position for the posterior pair, as in *mutata* and the size of these specimens is within the range for South African females of *mutata*, but larger than the size recorded for South African examples of *frenulata*. North of the Zambezi, on the other hand, *frenulata* is often the larger and these northerly examples may, perhaps, represent another race of *frenulata*.

On these admittedly rather inadequate grounds it is again suggested here that *glauca* and *mutata* are conspecific and that the larger of the two species in South Africa may thus be referred to as *Elatoneura glauca* (Selys) (vide Pinhey, 1951). Males of these two are, of course, readily separable by the anal appendages. It was thought for some time that the thorax of the mature male of *frenulata* in South African examples was black, without pruinosity, and coated with blue in the northerly specimens, as in *glauca*. The National

Museum, Bulawayo, has received a blue-coated male of *frenulata* from Oribi Gorge (Natal), 17.X.1960 (leg. D. Williams). Presumably, examples of *frenulata* from South Africa with black thorax have lost the pruinosity when handled in the field or through postmortem changes.

Metacnemis valida Hagen and Selys, 1863, fig. 3

Bull. Acad. Belg. Cl. Sci. (2)16: 8.

The type in Berlin Museum is a mature ♂, of which the only data on the labels are "2957, C.b.sp. Krebs."

As Schmidt (1951: 221) says the abdominal markings are very like those of the holarctic species, *Enallagma cyathigerum* (Charpentier, 1840). Further remarks and figures can be seen in Schmidt's paper, but it may be added that, apart from the medioventral swelling on the superior anal appendage, there is a long slender basal spine on the inner ventral surface, almost hidden in the tenth segment (fig. 3).

This is a distinctive species, said to have been taken in the Cape but hitherto not recorded again.

Mombagrion gracile Sjöstedt, 1909, fig. 1

Wiss. Ergebn. Schwed. zool. Exped. 2, 14: 44.

The type ♂ in Stockholm Museum is labelled "Mombo, Usambaras, Sjöstedt, Juni, 334/62".

Description: (fig. 1). Abdomen 36.5 mm, hindwing 23 mm. Labrum blue, clypeus black, genae, occiput and vertex mainly green; postocular spots with traces of yellowish (probably postmortem staining).

Thorax mainly pale bluish-green, with a pale brownish band against either side of mid-dorsal suture; black dot at upper end of humeral and second lateral suture; otherwise the thorax unmarked. Legs pale whitish. Abdomen pale bluish, with continuous black dorsal band on segments 1-7, constricted distally on most segments, especially on 2; 8-10 all blue. Inferior appendage pale, longer and much broader, in lateral view, than the superior; the superior black, with stout black ventral spine. Pterostigma brown. Forewing with 14 Px.

The corrected name for this species is *Aciagrion gracile* (Sjöstedt) (vide Schmidt, 1949). It is near *A. attenuatum* Fraser, 1928, which is a slightly smaller insect, darker on thorax and, in forewing, having only 12 Px.

Mombagrion congoense Sjöstedt, 1917, fig. 2.

Ark. Zool. 11(14): 15.

The type ♂ in Stockholm Museum is labelled "Kingoyi, Walder, (Belg.) Congo. 335/62."

Description: (fig. 2). Abdomen circa 30 mm, hindwing 21.5 mm.

Face and head above pale blue, postclypeus and central area of vertex blackish. Thorax pale blue; a brownish smear along median carina. Black dot at upper end of humeral and of second lateral suture and an isolated brown dot at ventral end of mesepimeron. Legs whitish. Abdomen nearly all pale blue, with isolated black distal triangle on segment 2, and black distal patches on 3-6. Superior appendage very robust, longer than segment 10, the two superiors divergent; having ventrobasal spine; inferior much shorter and, as in some species of *Enallagma* Charpentier, with slightly curved dorsal spine. Pterostigma dark brown. Forewing with 12 Px.

This species is now recognized as *Aciagrion congoense* (Sjöstedt) (= *Pseudagrion pseuderythromma* Ris and Schmidt, 1936), and is near *A. africanum* Martin, 1908. The latter is evidently a smaller species or race (vide Schmidt, 1951).

Enallagma vaginale Sjöstedt, 1917

Ark. Zool. 11(14): 20.

The type ♂ in Stockholm Museum is labelled "Dannfelt. (Belg.) Congo. 336/62."

Description: In markings and anal appendages this is similar to *E. longfieldae* Fraser, 1947, but it is smaller than typical examples and is somewhat immature. Abdomen 24.5 mm, hindwing 16.5 mm. (abdomen of specimens from Lake Victoria, Uganda, 27-31 mm). Specimens of *longfieldae* from La Manda River, Katanga, are smaller than typical ones from Uganda, yet not as small as the type specimen of *vaginale*. Like the latter, however, abdominal segment 10 is black above, instead of partly blue and it seems probable that southern Congo specimens constitute a separate subspecies. The pterostigma in the La Manda examples is less reddish than in those of Lake Victoria; in *vaginale* it is pale brown, but this is not significant because of the immaturity of this type specimen.

It is not clear in what part of the Congo the type of *vaginale* was collected. It seems a reasonable assumption to consider it closest to the southern Congo race. In the National Museum, Bulawayo, there are examples of typical *longfieldae* from Entebbe and Sango Bay on the northern shores of Lake Victoria.

Thus, *E. longfieldae* Fraser is evidently a subspecies of *E. vaginale* Sjöstedt. References to the former may be amended as follows: *Enallagma vaginale longfieldae* Fraser, comb. nov.

Libellago collaerti Navás (*collarti* auct.), 1929

Rev. Zool. Bot. afr. 18: 111.

The type, a teneral ♀ in Tervuren Museum, is labelled "Kuni, Mayumbe, Belg. Congo, 23.V.26, leg A. Collaert."

Description: (abdomen fractured), hindwing 22.5 mm. Nearest to *Chlorocypha tenuis* Longfield, 1936. Labrum black, with yellow mid-basal spot; (clypeus completely demolished); genae and a vertical stripe on front of occiput yellow. Head above black, basal segments of antennae yellow, and sparse yellow markings on vertex; pair of small semicircular spots on frons, small elliptical dot on outer side of posterior ocellus and small pyriform postocular dots. Pro- and synthorax brown with yellow band on anterior lobe of prothorax, connected with a yellow lateral band which is almost continuous with the slender yellow "fis-hook" antehumeral stripe (as in *C. basilewskyi* Fraser, 1955); the fish-hook narrower and rather less developed than in that species and also differing from *tenuis* in which it is a complete loop. Laterally, the thorax brown, with broad yellow band on metepisternum, extended as a short finger-like dorsal process but not continuing on to mesepimeron as it does in *basilewskyi*. Also a broad yellowish band on metepimeron.

Legs light brown, with darker spots on femora. Wings hyaline, venation brown, pterostigma pale brown, no basal amber suffusion. Quadrilaterals each with one cross-vein, except right hindwing in which there are two cross-veins. Abdomen slender, brown above, with discontinuous yellow lateral stripe; no dorsal black markings except for faint traces of distal bars or dashes; on segment 2 a mid-dorsal yellow dot. The more distal segments are more strongly marked with blackish.

By the slender shape of the body, the lack of strong dorsal markings on the abdomen, this type resembles the teneral condition in the *tenuis* group. Males of this group have the dorsum of the abdomen red, sparsely marked with black, in known species. In head markings and thoracic pattern it differs from both *tenuis* and *basilewskyi*. On these grounds, despite the teneral condition of the specimen, it may be considered that it is a distinct species, *Chlorocypha collaerti* (Navás).

EXPLANATIONS OF FIGURES

1-2. Tenth abdominal segment and anal appendages, seen from left, of *Aciagrion gracile* and *A. congoense*, respectively (types).

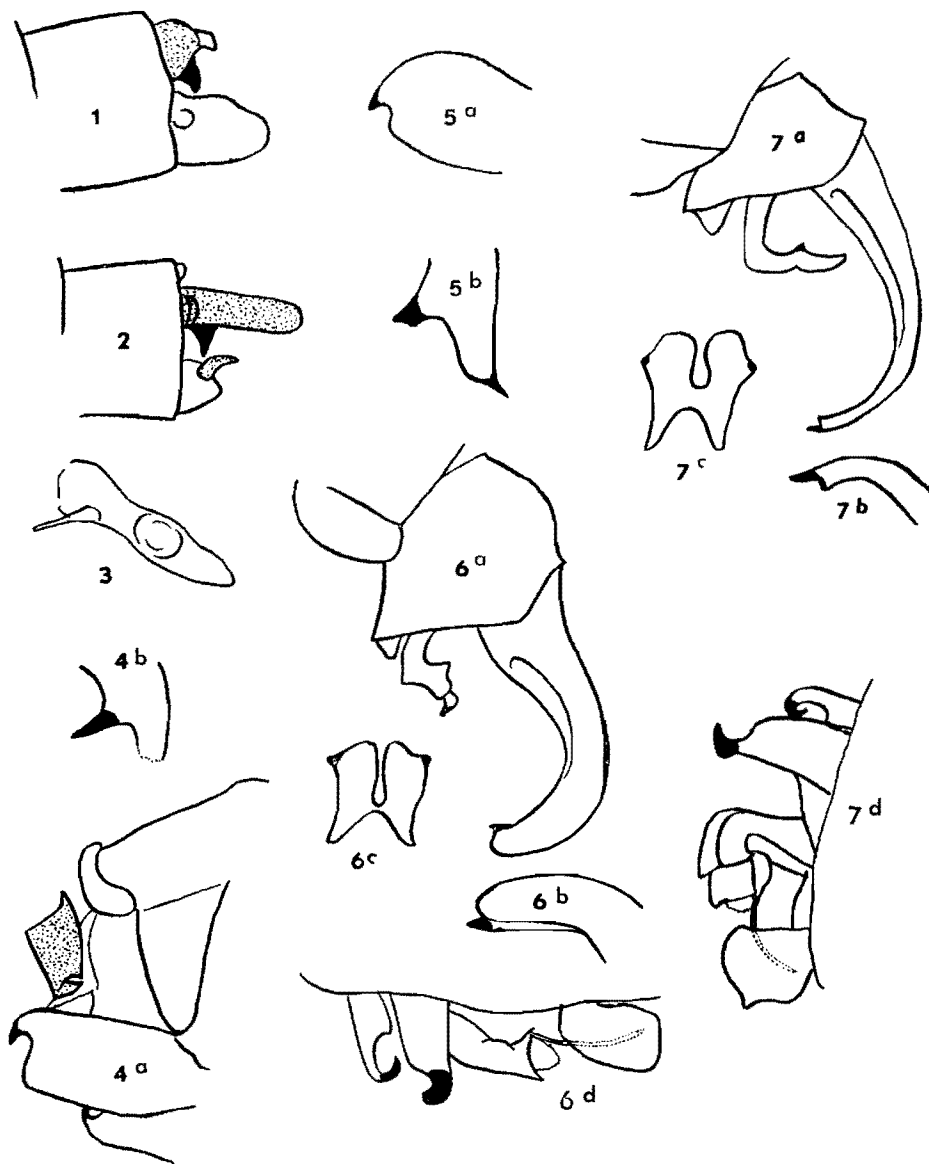
3. Right superior anal appendage of *Metacnemis valida*, seen from below (type).

4. *Notogomphus meruensis*. a. accessory genitalia, seen from the right (type); b. part of left superior anal appendage, with ventral spine, seen from its outer side.

5. *Notogomphus zernyi* (Rhodesian example). a. outer hamule; b. left superior appendage.

6. *Paragomphus lacustris* (type). a. anal appendages, from left; b. apex of left superior appendage, seen from inner side; c. inferior appendage, from below; d. accessory genitalia, from left.

7. *Paragomphus cataractae* spec. nov., type. a. anal appendages, from left; b. apex of left superior appendage, seen from inner side; c. inferior appendage, from below; d. accessory genitalia, from left.



Libellago graueri Schmidt (ined.)

In kindly lending this specimen Prof. Beier (Vienna Museum) pointed out that St. Quentin had already found it to represent *Chlorocypha molindica* Fraser, 1948. Since this identification was not published the present author had not realized that relationships of this specimen had been worked out. The ♂ in Vienna Museum is labelled "Urw. Mawambi, 1910, Grauer.", also with St. Quentin's *molindica* label dated 1958.

It is a typical male of *molindica* and has now been compared with the series in the National Museum, Bulawayo, from Kayonza and Mafuga Forests, S.W. Uganda and Ituri Forest, Congo.

Thus *Libellago graueri* Schmidt (ined.) is an example of *Chlorocypha molindica* Fraser (syn. nov., teste St. Quentin).

Libellago trifaria Karsch, 1899

Ent. Nachr. 25: 378.

The type, a teneral ♀ in Berlin Museum, is labelled rather illegibly, the locality being Semliki River forest, 26.XII.91. The Semliki River separates the Ituri Forest of the Congo from the Bwamba Forest of Uganda, in reality a continuous forest area.

Description: (abdomen damaged), hindwing 25.5 mm. Epistome pale yellowish in front (as in *Chlorocypha straeleni* Fraser and some other species); dorsum of frons and head extensively pale (as in *straeleni*). Thoracic antehumeral stripe a broad "fish-hook" almost completely sealed. Abdominal segment 2 dorsally with paired black spots joined to distal margin; 3-5 showing traces of black dorsal U-shaped markings; terminal segments damaged. Forewing faintly amber at base and costa, hindwing entirely of this hue. Pterostigma grey-brown with the usual pale distal spot. All quadrilaterals with two cross-veins.

This species is similar in all visible features to *C. straeleni* Fraser, 1949, which is common in that region. In fact, in all probability it is conspecific with, and should take priority over *straeleni* Fraser. It is further possible, but not yet established, that *straeleni*, and consequently *trifaria*, are forms of *cyaniifrons* (Selys, 1873), a darker insect also known from that vicinity.

Thus *Chlorocypha straeleni* Fraser falls in synonymy to *Chlorocypha trifaria* (Karsch), syn. nov.

Libellago camerunensis Sjöstedt, 1899

Bih. svensk. Vetensk. Akad. Handl. 25: 56.

The type, a teneral ♀ in Stockholm Museum, is from Cameroons.

Description: Similar to teneral *Chlorocypha rubida* (Hagen and Selys, 1853), but pale markings on head much more reduced. Abdomen 16 mm, hindwing

24.5 mm. Pale markings extensive on face, epistome and frons, but on vertex the pale colour reduced to one yellow dot on either side of ocelli, a line on back of occiput and the postocular spots. Thoracic antehumeral stripe as in *rubida*. Abdomen faintly patterned with black; segment 2 with pale umbrella marking framed with black, as in *rubida*, the following segments with black U-shaped markings. Forewing yellowish at base and costa, hindwing more uniformly pale amber, as in *rubida*.

The specimen represents a species of *Chlorocypha*, close to *rubida* (Hagen and Selys), possibly a distinct species, but just as likely to be a form of it.

Libellago grandis Sjöstedt, 1899

Ibidem 25: 58.

The type ♀ in Stockholm Museum, is also from Cameroons.

In markings of head, thorax and what can be detected on the abdomen, as well as the pterostigma and wing characters, it resembles the female of *Chlorocypha gracilis* (Karsch, 1899), only differing in being larger than examples of that species in the National Museum, Bulawayo. Hindwing of *gracilis* 24-25 mm, of *grandis* 27 mm. It may be assumed that it is a slightly larger example or form of the same species.

Thus, *Chlorocypha gracilis* (Karsch) falls in synonymy to *C. grandis* Sjöstedt, syn. nov.

Notogomphus nyassicus Grünberg, 1902

S.B. Ges. naturf. Fr. Berl. 9: 234.

The type, a mature ♀ in Berlin Museum, is labelled "N. Nyassa See, Langenburg 7.XI.99. Fülleborn S."

By build and venation this belongs to the genus *Microgomphus* Selys, 1857 of the subfamily *Epigomphinae*, and not the subfamily *Gomphinae*.

Description: Abdomen 27 mm, hindwing 24 mm, pterostigma 3 mm. Lips, face and frons entirely pale greenish. Thorax blackish-brown with faint white pruinosity. A single fusiform, green antehumeral stripe; mesothoracic collar with elliptical stripes on either side of median carina. On mesepimeron a dorsal green stripe crossing the first lateral suture and covering the spiracular area; a further broad stripe covering metepimeron except for a zone below second lateral suture. Legs dark ferruginous, pale at bases and inner surfaces of femora. Hind femur reaching about two-thirds along abdominal segment 2. Abdomen ferruginous at base, black on other segments, with pale markings; (segments 1-2 stained); pale mid-dorsal line on 2-4; 3-7 with green basal annuli; 8 with pale lateral spot. Cerci longer than segment 10, blackish; vulvar scales with acute apices. Wings faintly fumose; pterostigma pale brown, between dark brown veins. Forewing with four cross-veins between RS and MA before the bifurcation of RS. Two Cuq in forewing, one to two

in hindwing; forewing with 13-14 Ax; postdiscoial field of two rows, expanding well before nodus.

By markings as well as the shape of the vulvar scales this type resembles a female placed in the National Museum, Bulawayo, as the unknown female of *M. witchwoodensis* Pinhey, 1961, taken in the North Mwinilunga District of Northern Rhodesia, August 1961, by pupils of Sakeji School, Ikelenge. The type male of *witchwoodensis* was taken in the Vumba Mountains, Umtali, Southern Rhodesia. Thus, Grünberg's *nyassicus* is either the same as *Microgomphus witchwoodensis*, over which it would have priority, or the female of a very closely allied species, not yet known in the more distinctive male sex.

The conclusion at present is that the species represented by Grünberg's type is *Microgomphus nyassicus* (Grünberg), **comb. nov.**

Notogomphus stuhlmanni Karsch, 1899

Ent. Nachr. 25: 376.

The type, a mature ♀ in Berlin Museum, is labelled "D.O. Afrika, 27.11.94, Stuhlmann." Attached is also a label by Dr E. Schmidt: *Lestogomphus stuhlmanni*. Ris (vide Pinhey, 1961a: 78) thought it might not actually have been captured in Africa. However, it is conspecific with *Nepogomphoides pinheyi* Fraser, 1952, taken by the present author in the Usambara and the Uluguru Mountains of Tanganyika, and of which the female has also been described (Pinhey, 1956: 27).

It is larger than the type ♀ of *pinheyi*, the dimensions being: abdomen 30 mm, hindwing 28 mm, pterostigma 3 mm (in ♀ *pinheyi*: abdomen 29 mm, hindwing 26.5 mm).

Thus *Nepogomphoides pinheyi* Fraser falls in synonymy to *Nepogomphoides stuhlmanni* (Karsch), **syn. nov.**

Podogomphus meruensis Sjöstedt, 1909, fig. 4a-b

Wiss. Ergebn. schwed. zool. Exped. 2, 14: 25.

The type, a teneral ♂ in Stockholm Museum, is labelled "Meru Nieder, 4.XII; no. 337."

From the original description it was thought, by the present author, to be near *Notogomphus zernyi* (St. Quentin, 1942), a series of which is in the National Museum, Bulawayo, from the Eastern Border Mountains of Southern Rhodesia.

Description: (fig. 4)). Abdomen 33 mm, hindwing 29 mm, pterostigma 3 mm. Face yellow except for a faint brownish suffusion across the anterior surface of the frons; no definite trace of basal line on frons. Occipital plate slightly convex posteriorly. Thoracic dorsum ferruginous (but would surely have darkened at maturity), with yellow on mid-dorsal carina continuing on to

collar, but with the inner antehumeral stripe adjacent to, but not touching the carina; a very slender outer antehumeral, close to humeral suture. The dorsal brown of the thorax continuing laterally to first lateral suture and enclosing a yellow mesepimeral band. Femora mainly yellowish, tibiae and tarsi showing a tendency to darkening; femora reaching end of segment 2 of abdomen. Abdominal markings very like *zernyi*. Venation pale brown, pterostigma yellow, short. Superior anal appendage damaged at apex but having a well developed, black ventral spine (fig. 4b), more slender than in *zernyi* (fig. 5b) in which it has a posterior swelling.

In general features it is nearest to *Notogomphus zernyi* (St. Quentin), but the hook of the outer hamule is more prominent and the spine on the superior appendage is more slender. *Notogomphus meruensis* (Sjöstedt) is thus specifically, or at least subspecifically distinct.

Onychogomphus lacustris Karsch, 1890, fig. 6a-d

Ent. Nachr. 16: 377.

Two mature cotype males in Berlin Museum, are both labelled "Tanganyika S (i.e. See), P. Reichard." One of the cotypes is headless.

This is a species of the genus *Paragomphus* Cowley, 1934, and, until these types were examined it was tentatively assumed by the present author that they belonged to the same species as a series from the Victoria Falls, described as a new species in this paper.

Description of the cotypes: (fig. 6). (Abdomen, without appendages over 23 mm, but a middle segment lost on both types), hindwing circa 23 mm (but the wings somewhat damaged), pterostigma 2.5 mm. Lips and face greenish-yellow, the labrum tinted orange; a blackish basal line on frons. Synthorax yellowish-green pale ferruginous markings; a narrow curved line on mesepisternum (normally delineating the antehumeral stripes which are here, however, linked dorsally and uniformly with the inner green colour); a stripe on humeral suture and a band on second lateral suture. Abdomen ferruginous; segment 2 with pale posterior annulus; laterally a yellow patch on 1; oreillets yellow; 3 with yellow basal annulus, extending posterodorsally as two short tongues; 3-6 (surely including the missing segment) with pale basal annuli; 7 yellow on basal half; 8-10 and appendages plain ferruginous; foliations on 9-10 brown with black borders. Superior appendages thick almost to apices where they narrow abruptly, the superiors parallel to the ends; with flattened black ventral tooth and ridge.

Inferiors only about a quarter as long. Wings hyaline, venation dark brown, costal edges yellowish; pterostigma dark brown, between black veins. Forewing with 10-11 Ax; one Cuq in all wings; postdiscoidal field of two rows in forewing, expanding just after nodal level.

This species is near *Paragomphus elpidius* (Ris, 1921), but the superior appendage in that species is more slender and ends in a finer point. In shape these appendages are near those of *P. viridior* Pinhey, 1961 and *P. hyassicus*

Kimmins, 1955, but the apices are divergent in both those species and they bear several terminal teeth.

It may be considered, in fact, that *Paragomphus lacustris* (Karsch) is a distinct species.

Paragomphus cataractae spec. nov., fig. 7a-d

Paragomphus lacustris ? Pinhey, 1958 (nec Karsch), *Occ. Pap. nat. Mus. S. Rhod.* 22(B): 112; idem, 1961, *Occ. Pap. Livingstone Mus.* 14: 51.

♂ - HOLOTYPE (*mature*), (fig. 7). Abdomen (without appendages) 28.5 mm, hindwing 23.5 mm, pterostigma 2.5 mm. Lips, face and frons entirely pale green. The whole thorax and the femora pale yellowish-green except for faint traces of brown on mesepisternum which would, in other species, delineate a single antehumeral stripe and would indicate the edges of the pale collar and median carina; and a faint brown stripe on humeral suture. Tibiae and tarsi blackish-brown. Abdomen mostly pale green on segments 1-3; faint brown smears laterally and dorsally on 1-2, darker on distal half of 3; 4-6 with more diffused brownish marking and pale basal annuli; 7 yellowish on basal half; 8-9 ferruginous, with blackish foliations, the foliation on 9 not regularly rounded at margin; 10 paler, with yellow ventrolateral spot. Superior appendage brownish, paler ventrally; tapering, but the two superiors parallel, the apex of each with dorsal tooth. Inferiors about a third as long. Wings hyaline, venation blackish, pterostigma light brown, between black veins. Forewing with 11-12 Ax, the first and fifth being primaries; one Cuq in all wings; postdiscoidal field of two rows, expanding just after nodus.

Pale colours, in life: eye dark grey-blue, paler below; face, thorax and abdominal segments 1 to base of 3 very bright green (as in *P. viridior* Pinhey, 1961); the rest of the abdomen yellowish and brown.

♀ - ALLOTYPE (*mature*): Abdomen 31 mm, hindwing 27 mm, pterostigma 3 mm. Pterostigma yellower, abdomen broader than male, otherwise very similar. Cerci acute, one and a half times the length of segment 10; vulvar scale small, typical of the genus.

♂ - Holo- and ♀ - allotype, one ♂ - and one ♀ - paratype, Victoria Falls, December 1955, January 1956, one ♀ - paratype, Katambora, Zambezi River, February 1957, E. Pinhey; one ♂ - paratype, Lubwe, (N. Rhodesia), July 1959, R. C. Denning. One paratype of each sex will be deposited in the British Museum (Nat. Hist.), the other types being in the National Museum, Bulawayo. This species differs from *P. lacustris* (Karsch) in lacking the black basal band on the frons, in the less robust superior anal appendages, terminating in a slender dorsal tooth, instead of a flattened ventral tooth at the end of a ventral ridge; and in the longer inferior appendage. In *P. elpidius* Ris, 1921, the dark marking on face and thorax are more sharply defined and the superior appendages taper to a single point; in *P. hageni* (Selys, 1870) there is more than one terminal tooth on the slender superior appendages. In other described pale-headed species of the genus the superior appendages are either thick

and robust or, if slender, they are divergent, not parallel. The specific name for this new species is chosen for its habitat, the rapids of the Victoria Falls and Katambora, signifying its preference for fast-running waters.

Aeschna meruensis Sjöstedt, 1909

Wiss. Ergebn. schwed. zool. Exped. 2, 14: 32.

The type ♂ in Stockholm Museum is labelled "Meru 3000-3500 m, no. 338", the locality being the higher slopes of Mount Meru, North Tanganyika.

Description: Abdomen (without appendages) 46 mm, hindwing 48 mm, pterostigma 2.5 mm. Frons marked as in *Aeshna rileyi* (Calvert, 1892); thorax and abdomen reddish-brown; synthorax with two black-edged, yellow lateral stripes, no humeral stripe. In the variable *rileyi* there is often a partial humeral streak. Abdomen agreeing with that species except that the posterior lobes of the accessory genitalia on the second segment, although produced and prominent, are not as elongate as in *rileyi*. Anal appendages similar to that species. It seems evident that it is a form or race of *rileyi* which itself is common in that region, on the slopes of Mounts Kilimanjaro and Meru.

Thus *Aeschna meruensis* Sjöstedt falls in synonymy to *Aeshna rileyi* Calvert, *syn. nov.*

Macromia nyanzana Grünberg, 1911

Ent. Rdsch. 28: 104.

The type, a juvenile ♀ in Berlin Museum, is labelled "Viktoria Nyanza, Sesse Inseln, Koch S.G., Dönitz G."

Description: Abdomen 52 mm, hindwing 50 mm, pterostigma (forewing) 2.5 mm, slightly shorter in hindwing. Face pale ferruginous, darker on frontal cones; vesicle purplish-blue. Thorax without any evident pale stripes. Abdomen damaged and stained but obviously marked very much as in *M. reginae* Le Roi, 1915. Ovipositor scales very small, triangular; cerci short. Wings hyaline with a broad amber apical area to the forewing, starting almost at nodus; brown-tinted amber bases to all wings as far as third Ax. Venation brown, pterostigma whitish-brown (due to immaturity), membranule pale grey. Forewing with 16-17 Ax, as well as basal cross-vein, and five Cuq; hindwing with four Cuq; two rows in postdiscoidal field of forewing, increasing well before nodus.

This species agrees with *Macromia reginae* Le Roi, except that, although variable, the females usually have a more restricted brown and amber patch at the wing-bases, often only to about the second Ax in forewing. In the National Museum, Bulawayo, there is a mature female from the Sesse Islands, with this more extensive basal patch (leg. T. H. E. Jackson, September 1958). The present author considers this to be individual variation (vide Pinhey, 1951a: 114).

Thus, *Macromia reginae* Le Roi falls in synonymy to *M. nyanzana* Grünberg, syn. nov.

Macromia paula Karsch, 1892

Berl. ent. Z. 37: 15.

The type, a mature ♀ in Berlin Museum, is labelled "Kamerun, Buea 1/1-10/4 1891 Preuss S."

Description: Abdomen 59 mm, hindwing 50 mm, pterostigma 3 mm. Face and head in front all ferruginous, a tinge of purple on frontal cones; vesicle blackish-brown. Thorax ferruginous with slender yellow stripes, ante-humeral and two lateral; ante-alar sinus yellow, intra-alar spots greenish-yellow. Abdomen moderately slender, ferruginous on segments 1-2 and basal half of 3, then black on distal segments; segment 1 ferruginous; 2 with proximodorsal, yellow transverse line followed by a transverse annulus, incomplete mid-dorsally and, laterally, slanting forwards to proximoventral end; 3 with proximal annulus, incomplete dorsally, and a divided, central mid-dorsal spot; 4 with minute centrodorsal dot; 5-6 all black; 7 with broad yellow patch on proximal half, dorsally and dorsolaterally; 8-10 unmarked. Ovipositor scale minute, slender; cerci short, blackish. Wings hyaline, very slightly amber-tinted at extreme apex of forewing; with broad, brownish amber basal patches on all wings, on forewing to fifth Ax, on hindwing to fourth Ax. Pterostigma pinkish-brown; venation black. Forewing with 20-21 Ax and seven to eight Cuq, hindwing with five Cuq; two rows in postdiscoidal field, expanding before nodus. Membranule entirely dark greyish-brown.

In the strongly marked dark amber wing bases this species tends to resemble the *nyanzana* Grünberg group of those *Macromia* species having an inconspicuous ovipositor; but in build and thoracic markings it is more like *M. bicornis* Förster and *M. lieftincki* Fraser, although larger. In the National Museum, Bulawayo, there are two unnamed females of the genus *Macromia* Rambur, 1842, one from Nquundo, Moyen Congo, the other from Coquilhatville, which are smaller than *paula* (their abdomen circa 50 mm) and have a more extensive dark amber zone at the apex of the forewing, but which in other respects closely resemble the type of *paula*. Perhaps these represent a smaller Congo race.

From existing knowledge of the African members of the genus it may be considered that *M. paula* Karsch is probably a distinct species of which the male is still unrecorded.

REFERENCES

- COWLEY, J., 1934. Changes in the generic names of the Odonata. *Entomologist* 67: 200-5.
 ———, 1936. Key to genera, and list of species, of the *Disparoneura* complex. *Ann. Mag. nat. Hist.* (10)17: 509-26.

- FÖRSTER, F., 1909. Beiträge zu den Gattungen und Arten der Libellen. 1. Jb. *nassau. Ver. Naturk.* 62: 211-35.
- FRASER, F. C., 1928. Odonata of the African Continent. *Trans. ent. Soc. Lond.* 76: 123-38.
- , 1947. The Synonymy of *Enallagma elongatum* Martin and *E. pseudelongatum* Longfield; etc. *Proc. R. ent. Soc. Lond.* (B) 16: 143-8.
- , 1949. A Revision of the Chlorocyphidae, etc. *Bull. Inst. Sci. nat. Belg.* 25(6): 1-50.
- , 1949. Gomphidae from the Belgian Congo. *Rev. Zool. Bot. afr.* 42: 101-38.
- , 1950. A Revision of the Chlorocyphidae, addenda, with key, etc. *Bull. Inst. Sci. nat. Belg.* 26(18), 22 pp.
- , 1952. Notes of African Gomphidae; etc. *Occ. Pap. Coryndon Mus.* 3: 3-12.
- , 1954. New Species of *Macromia* from tropical Africa. *Rev. Zool. Bot. afr.* 49: 41-76.
- , 1955. La faune entomologique du Ruanda-Urundi, Mission Basilewsky, 1953. *Ann. Mus. Congo Belge.* 4to 36: 21-6.
- GRÜNBERG, K., 1902. Neue Odonaten aus dem Njassa-Gebiet, gesammelt von Dr. Fülleborn. *S.B. Ges. naturf. Fr. Berl.* 9: 230-7.
- , 1911. Zur Kenntniss der Odonatenfauna der Sesse-Inseln. *Ent. Rdsch.* 28: (103-4).
- KARSCH, F., 1899. Odonaten von Johann-Albrecht-Höhe gesammelt von Herrn Leopold Conradt. *Ent. Nachr.* 25: 161-76.
- KIMMINS, D. E., 1955. Three new species of African Odonata. *Entomologist* 88: 109-14.
- LONGFIELD, C., 1936. Studies on African Odonata, with synonymy, etc. *Trans. R. ent. Soc. Lond.* 85: 467-98.
- MARTIN, R., 1908. Voyage de feu Leonardo Fea dans l'Afrique occidentale. *Ann. Mus. Stor. nat. Genova.* 43(3): 649-67.
- NAVÁS, L., 1929. Insectes du Congo Belge. 3. *Rev. Zool. Bot. afr.* 18: 92-112.
- PINHEY, E. C. G., 1951. The dragonflies of Southern Africa. *Transv. Mus. Mem.* 5, 310 pp.
- , 1956. Some Dragonflies of East and Central Africa etc. *Occ. Pap. Coryndon Mus.* 4: 17-41.
- , 1958. Records of Dragonflies from the Zambezi and Rhodesia; etc. *Occ. Pap. nat. Mus. S. Rhod.* 22 (b): 97-116.
- , 1961a. A Survey of the Dragonflies of Eastern Africa. *Brit. Mus. Publ.* 214 pp.
- , 1961b. Dragonflies of Central Africa. *Occ. Pap. Livingstone Mus.* 14, 97 pp.
- , 1961c. Some dragonflies from Angola; and the description of three new species of the family Gomphidae. *Publ. cult. Cia Diamant. Angola* 56: 79-86.
- , (in press) A Descriptive Catalogue of the Odonata of the Ethiopian Region (up to Dec. 1959). 1. *Ibidem.*
- RIS, F., 1921. The Odonata of South Africa. *Ann. S. Afr. Mus.* 18: 245-445.
- RIS, F. und SCHMIDT, E., 1936. Die *Pseudagrion*-Arten des kontinentalen Afrika. *Abh. Senckenb. naturf. Ges.* 433: 1-68.

- SCHMIDT, E., 1949. Libellen aus Portugiesisch Guinea, etc. *Arch. Mus. Bocage* 20: (125-200) (1951).
- , 1951. Über neue und weniger bekannte afrikanische Platycnemididen. *Mitt. Münch. ent. Ges.* 41: 217-40.
- SELYS-LONGCHAMPS, M. E., 1886. Révision du Synopsis des Agrionines, 1. *Mém. Cour. Acad. R. Belg.* 38(4), 233 pp.
- SJÖSTEDT, Y., 1909. Odonata, in *Exped. Kilim.-Meru, Massaisteppe. Wiss. Ergebn. schwed. zool. Exped. Kilimandjaro-Meru 1905-06*, 2, 14(1): 1-52.
- , 1917. Odonaten aus Abessinien, Ost- und Westafrika. *Ark. Zool.* 11 (14): 1-27.
- ST. QUENTIN, D., 1942. Beiträge zur Kenntniss der Insektenfauna Deutsch-Ostafrikas, Matengo-Hochlandes; etc. *Ann. naturh. (Mus.) Hofmus., Wien* 52: 106-16.